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(58) Field of search

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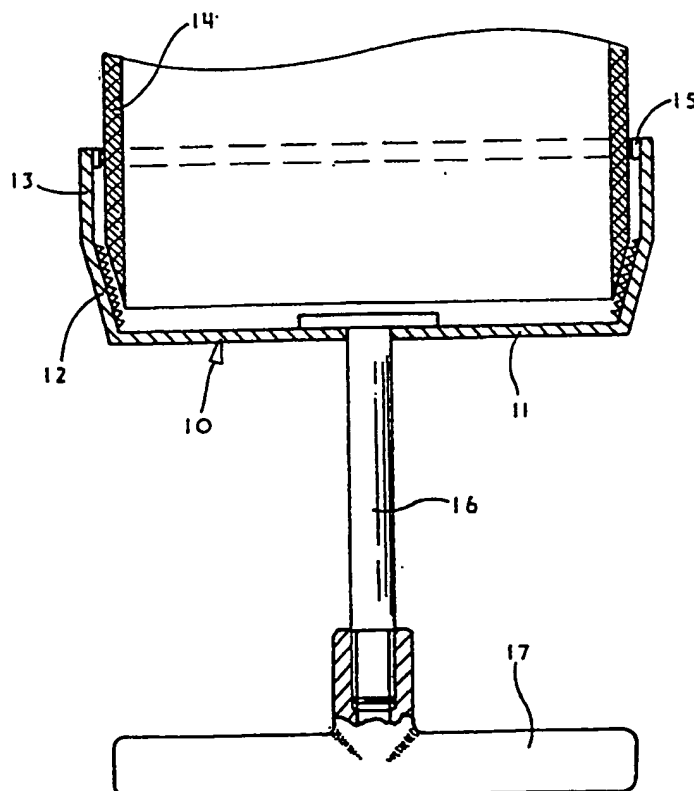
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(54) Chamfering tools

(57) A tool is provided for effecting a chamfering operation on an end of a length of plastic pipe 14. The tool includes a cup-shaped housing 10 within which is disposed either an abrasive or an array of cutting blades. The abrasive or cutting blades form a frusto-conical array and the housing is provided with a stem or spindle 16 to enable the housing to be rotated either manually or using an electric drill and thereby chamfer the end of the pipe.

Fig 1



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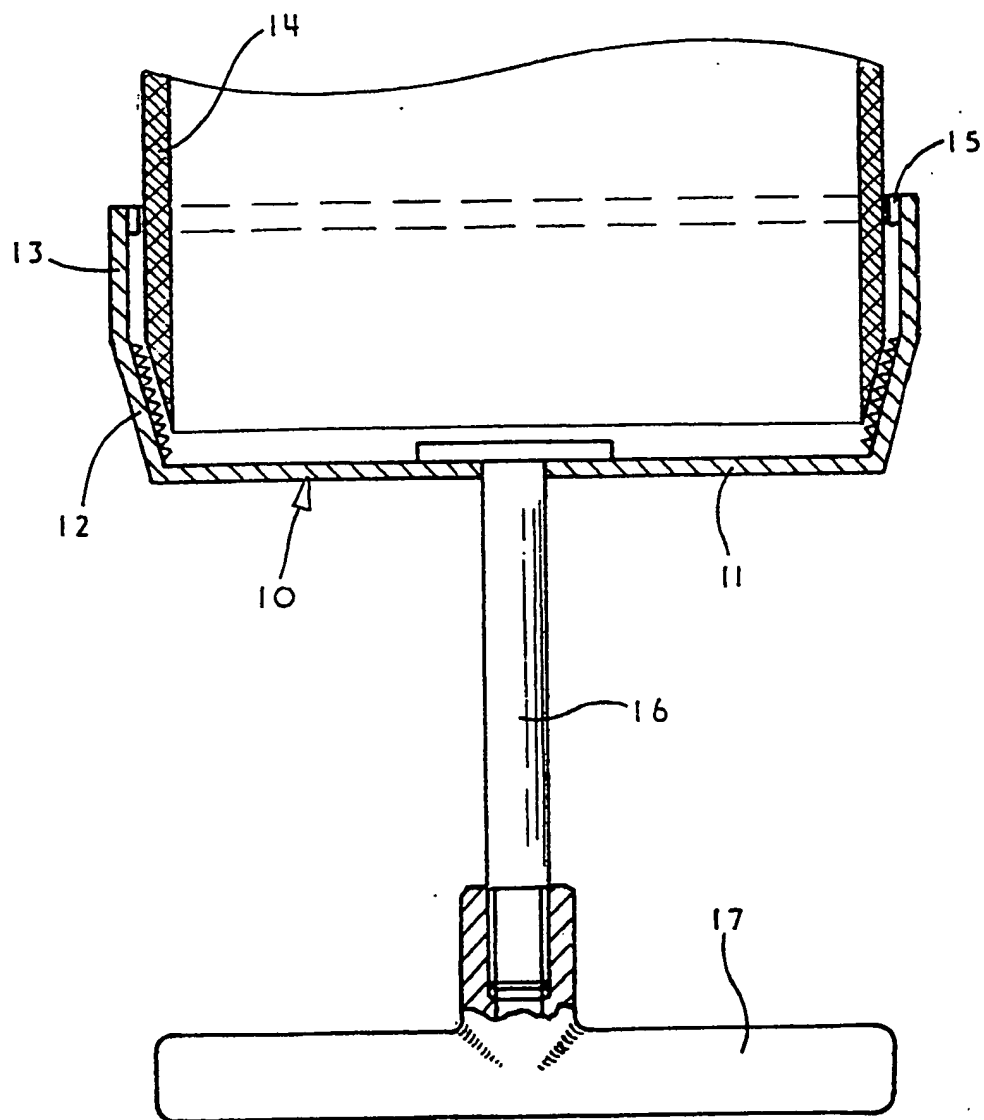


Fig 1

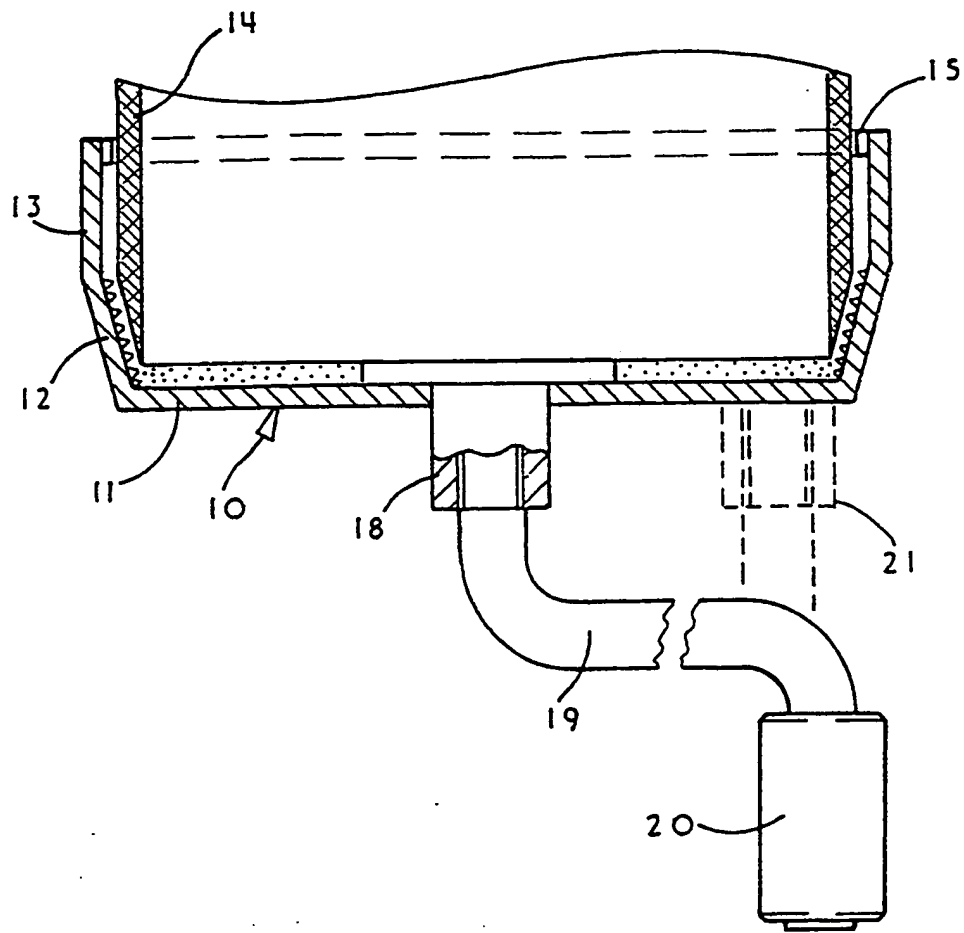


Fig 2

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CHAMFERING TOOLS

Field of the Invention

This invention relates to chamfering tools and, in particular, to tools for use in carrying out a chamfering operation on a length of plastic pipework.

Background to the Invention

When working on a building site or installing plastic pipework, it is often necessary to cut a pipe to the required length before joining the pipe to a pipe coupling or other fitment. Unless the end of the pipe is chamfered, it is extremely difficult to engage it accurately with the coupling or other fitment.

It is a laborious and irksome task to chamfer the end of a long plastic pipe by filing it by hand but, in the absence of any suitable tools for this purpose, this is what has had to be done.

It is accordingly an object of the present invention to provide a chamfering tool which can be used for this purpose.

Summary of the Invention

According to the present invention there is provided a tool for use in carrying out a chamfering operation, said tool comprising a housing within which chamfering means is disposed in the form of a frusto-conical array, said housing having an opening permitting the insertion of an end of a pipe, and means being provided for effecting rotation of the housing such that, when an end of a pipe is inserted through said opening for engagement with the chamfering means and the housing is rotated, a chamfering operation is effected on the end of the pipe.

The means which are provided for effecting rotation of the housing may be in the form of a stem or spindle which terminates in a manually operable handle whereby rotation of the housing can be effected manually. Alternatively, said means may be in the form of a stem which can be gripped within the chuck of either a power drill or hand-brace.

The housing may be of generally cup-shape with the open mouth of the cup permitting the insertion of the end of the pipe, the part of the cup around the open mouth being in the form of a generally cylindrical wall and being connected by a frusto-conical wall portion to a generally flat base, the chamfering means being carried by said frusto-conical wall portion.

The chamfering means may be in the form of a plurality of circumferentially spaced cutting blades the cutting edges of which are inclined to the axis of rotation of the housing such that, as the housing is rotated, the material at the end of the pipe is cut at the appropriate angle.

The chamfering means may alternatively be provided either by abrasive pads attached to said frusto-conical wall portion or by an abrasive grit bonded to the interior surface of said frusto-conical wall portion.

#### Brief Description of the Drawings

Figure 1 is a vertical section view showing the use of a first form of chamfering tool in carrying out a chamfering operation on the end of a length of plastic pipe, and

Figure 2 is a similar view of a second form of chamfering tool.

#### Description of the Preferred Embodiments

The chamfering tool shown in Figure 1 comprises a generally cup-shaped housing 10 which can be formed as a metal casting. The housing 10 includes a flat base 11, a frusto-conical wall portion 12 and a cylindrical upstand 13 around the open mouth of the cup. The frusto-conical wall portion 12 is

inclined at an angle of  $75^{\circ}$  to the plane of the base 11 and the interior surface of said wall portion 12 carries a bonded layer of abrasive grit.

The tool is intended to be used for chamfering the ends of pipes of a given diameter and the dimensions of the wall portion 12 and upstand 13 are such that a pipe 14 can readily be fitted into the open mouth of the housing 10. One standard pipe has an internal diameter of 100 mm., a wall thickness of 5 mm. and an external diameter of 110 mm.

A tool for use with such a pipe will have an internal diameter of 116 mm. and, to avoid floppiness of the pipe 14 when fitted within the open mouth of the housing, a number of spaced studs or lugs 15 are provided adjacent the lip of the upstand 13. A continuous band (not shown) could be provided as an alternative to the studs or lugs 15.

The axial length of the abrasive area afforded by the grit on the inner surface of the wall portion 12 is such that, when a chamfering operation has been completed and the end of the pipe 14 has been formed to the shape shown in Figure 1, a 5 mm. clearance will be afforded between the end of the pipe 14 and the base 11 of the tool. The provision of this clearance ensures that pipes which have not been cut completely squarely can be accommodated.

It will be appreciated, of course, that the detailed dimensions given above are purely by way of example, and that the invention is not limited to the use of any particular dimensions.

A spindle 16 extends from the base 11 of the tool and terminates in a handle 17. The spindle 16 is disposed on the axis of the cone of which wall portion 12 forms part so that, as the spindle is turned about its axis, the abrasive grit carried by the wall portion 12 moves in the path required to effect a chamfering operation producing, in this instance a chamfer of  $15^{\circ}$ , which is that recommended by the pipe and coupling manufacturers.

In the embodiment shown in Figure 1, the handle 17 is in the form of a Tee bar having an internally threaded socket which is engaged with a threaded end portion of the spindle 16. Other arrangements can, however, be provided for effecting rotation of the tool for carrying out a chamfering operation. Some possible alternatives are illustrated in Figure 2 in which the same reference numerals are used as in Figure 1 to indicate those parts which are the same as those shown in Figure 1.

Thus, the tool of Figure 2 includes a base 11, a frusto-conical wall portion 12 and a cylindrical up-stand 13 having inwardly directed studs or lugs 15. In this case, however, a centre fitment 18 is attached to the centre of the base 11 and



includes an outwardly facing, internally threaded socket into which a straight bar (not shown) can be fitted. This bar can then be gripped in the chuck of an electric drill so that, on actuation of the drill, the tool 10 is rotated at high speed to effect chamfering of the pipe 14.

As an alternative to the use of an electric drill, the bar (not shown) can be gripped in the chuck of a hand brace and rotation of the tool 10 effected using the hand-brace. As a further alternative, and as shown in full lines in Figure 2, a threaded end portion of a cranked bar 19 can be fitted into the socket of fitment 18, the bar 19 being provided at its free end with a hand-grip 20 so as to facilitate rotation of the tool 10 using the bar 19.

A still further alternative is shown in broken lines in Figure 2 and comprises a threaded socket 21 fitted adjacent the periphery of the base 11 and arranged to receive a straight handle for effecting rotation of the tool 10.

Claims:-

1. A tool for use in carrying out a chamfering operation, said tool comprising a housing within which chamfering means is disposed in the form of a frusto-conical array, said housing having an opening permitting the insertion of an end of a pipe, and means being provided for effecting rotation of the housing such that, when an end of a pipe is inserted through said opening for engagement with the chamfering means and the housing is rotated, a chamfering operation is effected on the end of the pipe.

2. A tool as claimed in Claim 1, in which the means provided for effecting rotation of the housing is in the form of a stem or spindle.

3. A tool as claimed in Claim 2, in which the stem or spindle is coaxial with the cone frustum.

4. A tool as claimed in Claim 2 or Claim 3, in which the stem or spindle terminates in a manually operable handle.

5. A tool as claimed in Claim 2 or Claim 3, in which the stem or spindle is so formed that it can be gripped within the chuck of either a power drill or hand-brace.

6. A tool as claimed in any one of the preceding claims, in which the housing is of generally cup-shape with the open mouth of the cup permitting the insertion of the end of the pipe.

7. A tool as claimed in Claim 6, in which the part of the cup around the open mouth is in the form of a generally cylindrical wall and is connected by a frusto-conical wall portion to a generally flat base, the chamfering means being carried by said frusto-conical wall portion.

8. A tool as claimed in any one of the preceding claims, in which the chamfering means is in the form of a plurality of circumferentially spaced cutting blades.

9. A tool as claimed in any one of Claims 1 to 7, in which the chamfering means is provided either by abrasive pads or by an abrasive grit.

10. A tool for use in carrying out a chamfering operation substantially as hereinbefore described with reference to and as shown in Figure 1 of the accompanying drawings.

11. A tool for use in carrying out a chamfering operation substantially as hereinbefore described with reference to and as shown in Figure 2 of the accompanying drawings.

12. A method of effecting a pipe joint which includes chamfering the end of a pipe using a tool as claimed in any one of the preceding claims.